

**THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	
Inventors: Randall A. GREENE	: Confirmation No. 3086
	:
U.S. Patent Application No. 10/821,974	: Group Art Unit: 2612
	:
Filed: April 12, 2004	: Examiner: Eric BLOUNT
For: HELICOPTER TACTILE EXCEEDANCE WARNING SYSTEM	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Attn: BOARD OF PATENT APPEALS AND INTERFERENCES

**BRIEF ON APPEAL**

Further to the Notice of Appeal filed August 31, 2006, in connection with the above-identified application on appeal, herewith is Appellant's Brief on Appeal. The requisite fee of \$250.00, as set forth in 37 C.F.R. § 1.17(f), accompanies this brief.

To the extent necessary, Appellant hereby requests any required extension of time under 37 C.F.R. §1.136 and hereby authorizes the Commissioner to charge any required fees not otherwise provided for to Deposit Account No. 07-1337.

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**TABLE OF AUTHORITIES**

**Cases**

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**I. Real Party in Interest**

The real party of interest is Safe Flight Instrument Corporation, a corporation of New York, the Assignee of the above-identified application.

**II. Related Appeals and Interferences**

There are no related appeals and/or interferences.

**III. Status of Claims**

Claims 5 and 10 have been rejected in a final Office Action of June 3, 2006. All other claims have been cancelled.

**IV. Status of Amendments**

Applicant's response of April 3, 2006 has been entered.

**V. Summary of Claimed Subject Matter**

The following is a concise explanation of the invention as defined by claims 5 and 10 which are involved in this appeal. The summary includes the page, paragraph and line numbers which refer to the Applicant's specification as well as figures and numbers which refer to elements in the specification and claims.

To put matters in perspective, the invention relates to a helicopter tactile warning system for avoiding "hot starts" and other unsafe operating conditions (page 1, lines 3-4). For example, it is well known that during the first few seconds of a start, the turbine outlet temperature will accelerate at a rapid rate and a pilot typically aborts the start if a maximum

temperature of about 929°C or 810°C to 927°C maximum 10 second transient limitation is about to be exceeded (page 1, second paragraph).

In addition, systems in accordance with the present invention provide an unmistakable tactile warning to avoid hot starts plus a tactile warning for avoiding over-stressed conditions such as output temperatures, torque and engine speed during flight operations. Such systems include a single multi-function tactile warning device for warning a pilot of dangerous conditions (See page 2, line 16-21, first full paragraph).

To be more specific, the helicopter turbine engine over-stress warning system includes, "a helicopter 20 having a turbine engine 22 mounted therein and an over-stress warning system is shown (page 4, lines -5)." The over-stress warning system also includes "a collective 2 and a tactile warning device 26 attached thereto" (page 4, lines 5-6, and Figure 1). A conventional sensor 52, (Figure 2) such as a thermocouple is provided for measuring the turbine outlet temperature of a helicopter turbine engine. The sensor 52 is connected to a microprocessor 34. The microprocessor is connected to a tactile warning device 26 such as a stick shaker which is attached to the helicopter collective 24 (page 4, lines 6-10).

The system in accordance with the invention also includes data storage means 60 such as a computer and input means 62 such as a keyboard for inputting the critical parameters into the data storage means 60 (see page 6, lines 16-18 and Figure 5). As set forth on page 5, "...the turbine output temperature is sensed and....the actual temperature is compared to the safety starting temperature or safe temperature profile. Then if the actual temperature does not exceed the safe temperature or fall outside of the temperature profile, the turbine engine is started...However, if the actual temperature is greater than the safe temperature or falls outside

of the temperature profile, a tactile warning is given...and the start is aborted..."(page 5, lines 14-19).

Referring to Figure 5, comparator means 72 such as a computer compares the actual temperature from the temperature output temperature 70 with the safe temperature. Then when the actual temperature exceeds the safe temperature, the tactile actuator is activated as indicated by the box 74. A kill switch 76 is provided so that the pilot can abort the start under such conditions. However, if the comparator 72 indicates that the actual temperature does not exceed the safe temperatures, the engine is started and the power controlled by a power control means 80. After the start of the engine and regulation of the power, the actual conditions of the engine are monitored by monitoring means 82 until such time that an actual condition exceeds a critical condition. When an actual condition exceeds a critical condition, the tactile device is activated as indicated by 84 and corrective action is taken by the pilot as indicated by 86 (page 6, lines 22 – page 7, line 2).

Figure 3 illustrates a shaker 24 which is attached to the collector 26. In this type of installation, the shaker 24 is attached to leaf spring 29, which in turn is attached at one end to a clamp 31. It should be recognized that the shaker 24 may provide a constant frequency or amplitude of vibration once it has been actuated or the frequencies and/or amplitude of the vibration may increase as the turbine engine output temperature reaches its maximum operating temperature. The increase may either be continuously or may be in discrete steps reaching a maximum at the point for aborting the start (page 4, lines 22-28).

As contemplated by one embodiment of the invention, "the input of the critical parameters includes the actual critical parameters including turbine output temperature during

flight which requires immediate action by the pilots as well as a second level of parameters which are slightly less than the critical parameters are also provided. Then, when the actual temperature or other actual parameter approaches the critical parameters or critical temperatures i.e. approximately equal to the critical parameters in step 81, the tactile warning device is acted (activated) at a first or relatively low frequency or amplitude in step 83 (page 5, lines 24-31).

The first level of warning is an indication to the pilot that he is approaching the critical parameter and should seriously consider corrective action. However, if the pilot continues to fly due to emergency conditions or the like without taking corrective action as indicated in step 85, the actual temperature and actual parameter are continuously compared until they exceed a second level of critical parameters as indicated by step 87. At this point, the frequencies of the tactile warning is increased in step 89 to warn the pilot to immediately take corrective action in step 91 (see page 6, lines 1-7 and Figure 4).

**VI. Grounds of Rejection to be Reviewed on Appeal**

**A. Rejection under 35 U.S.C. § 103(a)**

**VII. Argument**

**A. Rejection under 35 U.S.C. § 103(a)**

The sole issue in this Appeal is whether or not claims 5 and 10 are unpatentable over Kelley (U.S. Patent No. 3,775,745 ('745)) in view of Augustin et al. (WO 03/081,554A1) and in further view of Greene et al. (U.S. Patent No. (6) 5,986,582). An important aspect of this issue resides in the limitations of the Kelley primary reference.

35 U.S.C. § 103(a) provides:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in Section 102 of this title, if the difference between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability should not be negated by the manner in which the invention was made. (emphasis added)

It is Applicant's contention that the subject matter as a whole as defined by claims 5 and 10 of the above-identified would not have been obvious to a person of ordinary skill in the art at the time the invention was made by applicant.



As recognized by the Examiner, the Kelley ('745) reference does not disclose a collective and a tactile warning device operatively connected to the collective. Further, Kelley does not disclose or suggest inputting....other safe operating parameters during flight operations....or ...means for detecting other actual parameters during flight of the helicopter as called for in Applicant's claims 5 and 10. In addition, the Kelley reference does not disclose or suggest means to activate said textile warning device when...the other safe operating parameters are exceeded during flight operations as called for in claims 5 and 10.

The Kelley reference discloses a system for providing an audible or visible alarm whenever a condition occurs with respect to the turbine which inevitably would lead to an overheating condition. What the Kelley reference discloses is to monitor various perimeters which indicate a developing over temperature condition (see column 1, lines 33-42 of '745). What Kelley does disclose is to monitor the output temperature and the rate of turbine outlet temperature rise in order to anticipate an over temperature condition. Kelley does not disclose or suggest means for activating a tactile warning system during flight operation when an over stress condition such as excessive torque or engine speed are encountered (see Applicant's Specification, page 3, lines 7-10). The Kelley reference makes no reference to matters other than those relating to over heating. Accordingly, it is Applicant's contention that the rejection under 35 U.S.C. § 103(a) is improper and should be reversed.

In essence, it is Applicant's contention that claims 5 and 10 call for a unique combination of elements and/or steps that include:

Means for increasing the magnitude of the tactile warning when the turbine output temperature reaches its maximum operating temperature; and

Means for increasing the frequency of the tactile warning in response to an impending dangerous condition when the impending dangerous condition is eminent.

Section 2143.03 of the Manual of Patent Examining Procedures provides:

2143.03 All claim limitations must be taught or suggested.

To establish prima-facie obviousness of a claimed invention all of the claim limitations must be taught or suggested by the prior art....(cite omitted) all words in a claim must be considered in judging the patentibility of that claim against the prior art (cite omitted).

In the present case, none of the cited references taken alone or in view of one another disclose or suggest Applicant's unique combination of elements and/or steps as called for Applicant's claims 5 and 10. To be more specific, none of the references taken alone or in view of one another disclose or suggest a system or method wherein a single action is used to avoid "hot-starts", over heated engines in flight and other unsafe operating parameters such as excess torque and engine speed or the like. What Applicant has done is to develop a single system wherein a single tactile warning is used to alert a pilot to a plurality of different conditions and with an added feature wherein a pilot is given a further warning.

To be more specific, none of the cited references disclose or suggest:

Means for increasing the magnitude when the turbine output temperature reaches its maximum operating temperature; and

Means for increasing the frequency of the tactile warning in response to an impending dangerous condition when the impending dangerous condition is imminent.

This is just one more example where Applicant has used the magnitude or amplitude when the turbine output temperature reaches its maximum temperature and in different circumstances uses means for increasing the frequency of the tactile warning in response to an impending dangerous condition when the impending dangerous condition is imminent. What Applicant has done is to use a single device to produce two different signals under two different circumstances which tell a pilot what is the specific problem without an audio or visual annunciation.

Finally, it is a basic principle of the United States Patent Laws that it is improper to arbitrarily pick and choose prior art patents and combine selected portions of the selected patents on the basis of the Applicant's disclosure. It is improper to create a hypothetical or fictional combination which allegedly renders a claim obvious unless there is some direction in the selected prior art patents to combine the selected teaching in a manner to negate the patentability of the claimed subject matter. Orthopedic Equipment Co., Inc. vs. the United States, 217 USPQ 193 (Fed. Cir. 1983). In that decision the Court pointed out that a piecemeal reconstruction of the prior art in light of an Applicant's disclosure is not a proper basis for an obvious rejection under 35 U.S.C. § 103. The Court stated (page 199):

"As previously explained, the available art shows each of the elements of the claims in suit. Armed with this information, would it then be non-obvious to this person of ordinary skill in the art to coordinate these elements in the same manner as the claims in suit? The difficulty which attaches to all honest attempts to answer this question can be attributed to the strong temptation to rely on hindsight while undertaking this evaluation. It is wrong to use the patent in suit as a guide through the maze of prior art references, combining the right references in the right way so as to achieve the result of the claims in suit. Monday morning quarterbacking is quite improper in a court of law."

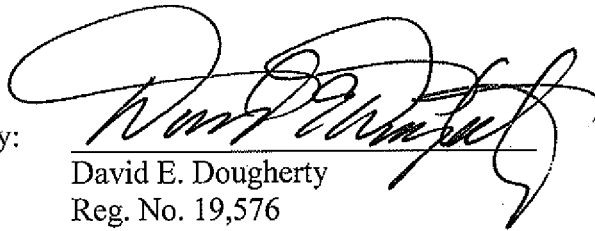
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**VIII. Conclusion**

In view of the above, the Examiner's rejection of claims 5 and 10 under 35 U.S.C. '103(a) should be reversed.

Respectfully submitted,

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**IX. Claims Appendix**

5. A helicopter turbine engine over stress warning system comprising:

a helicopter;

a helicopter turbine engine mounted in said helicopter;

a collective and a tactile warning device including a collective shaker operatively connected to said collective;

data storage means and means for inputting a safe turbine output temperature profile for startup of the helicopter turbine engine and other safe operating parameters during flight of the helicopter;

means for measuring actual turbine output temperature during startup of the turbine engine and for detecting actual turbine output temperatures and other actual parameters during flight of the helicopter;

means to activate said tactile warning device when the actual turbine output temperature during startup falls outside of the safe turbine output temperature profile during startup and when the safe turbine output temperature or other safe operating parameters are exceeded during flight operations to thereby warn a pilot to take corrective action;

means for increasing the magnitude of the tactile warning when the turbine output temperature reaches its maximum operating temperature; and

means for increasing the frequency of the tactile warning in response to an impending dangerous condition when the impending dangerous condition is imminent.

10. A method for protecting a helicopter of the type having a helicopter turbine engine against "hot-starts" during startup thereof and against other dangerous conditions during flight operations, the method comprising the steps of:

providing a pilots control stick and a tactile warning device operatively connected to the control stick;

providing a safe temperature profile for startup of a helicopter turbine engine and critical parameters for flight operations;

monitoring an actual turbine output temperature of the engine during startups;

activating the tactile warning device when the actual turbine output temperature during startup falls outside of the safe temperature profile and aborting the startup in a response to the tactile warning;

monitoring the actual parameters for the safe operation of a helicopter during flight operations;

activating the tactile warning device at a first preselected magnitude when an actual parameter for a dangerous operation is approached;

increasing the magnitude of the tactile warning when a dangerous condition exists; and

in which the frequency of the tactile warning in response to an impending dangerous condition is increased when the dangerous condition is imminent.

**X. Evidence Appendix**

None.



**XI. Related Proceedings Appendix**

None.

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**XII. Certificate of Service**

None.